

IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently Amended) A mold clamping apparatus comprising:

a mold having a longer side and a shorter side and in which a mold opening force is generated by applying a pressure for opening the mold to ~~the~~ an inside of said mold;

a frame including a holding portion for holding said mold resisting ~~the~~ a generated mold opening force and an open portion allowing said mold to be inserted into/taken out from said holding portion in a direction of the shorter side of said mold;

a mold moving device that moves said mold to insert/take out said mold into/from said holding portion through the open portion in said frame; and

a mold opening/closing device that opens/closes the mold located outside the frame,
wherein

said frame comprises an overhang portion and a base portion, composing the holding portion, and a post portion for joining the overhang portion to the base portion, and

molding parameters of respective portions of the frame are set up so that a stress index value K calculated according to the following expression is in a range of 0.2 to 15:

$$K = [(6\Phi E/D^2) + (\Phi/D)](1 + (0.0188D/C + 0.243)(D/R)^{1.18})$$

wherein

C is a maximum width of the overhang portion;

D is a maximum width of the post portion;

E is a minimum distance from the post portion to the center in the mold to which a pressure is applied;

R is a maximum curvature radius of a connecting corner portion between the overhang portion or base portion and the post portion; and

Φ is a width of a projection plane perpendicular to a direction of a mold opening force as a portion to which a pressure in the mold is applied.

2. (Canceled)

3. (Currently Amended) A mold clamping apparatus ~~according to claim 1~~, comprising:
a mold having a longer side and a shorter side and in which a mold opening force is
generated by applying a pressure for opening the mold to an inside of said mold;
a frame including a holding portion for holding said mold resisting a generated mold
opening force and an open portion allowing said mold to be inserted into/taken out from said
holding portion in a direction of the shorter side of said mold;
a mold moving device that moves said mold to insert/take out said mold into/from said
holding portion through the open portion in said frame; and
a mold opening/closing device that opens/closes the mold located outside the frame,
wherein said frame comprises a plurality of the holding portions and open portions.

4. (Original) A mold clamping apparatus according to claim 3, wherein
the mold moving device moves a plurality of molds to insert or take out said molds
into/from the holding portion through each open portion.

5. (Original) A mold clamping apparatus according to claim 1, further comprising:
a mold closing force application device that applies a force for closing the mold ~~resisting~~
~~the mold opening force of the mold.~~

6. (Currently Amended) A mold clamping apparatus according to claim 5, wherein the mold closing force application device applies a force higher than ~~the~~ a mold opening force ~~of the mold~~ in a direction of closing the mold using a pressure applied to the inside of the mold.

7. (Currently Amended) A mold clamping apparatus according to claim 1, further comprising:

an axially pressing device provided on the mold for performing hydraulic pressure bulging processing, provided on the mold.

8. (Currently Amended) A mold clamping apparatus according to claim 1, wherein a predetermined functional device necessary for molding is provided such that it is ~~protruded~~ protrudes from a face not opposing the frame of the mold.

9. (Currently Amended) A mold clamping apparatus ~~according to claim 1~~ comprising:
a mold having a longer side and a shorter side and in which a mold opening force is generated by applying a pressure for opening the mold to an inside of said mold;

a frame including a holding portion for holding said mold resisting a generated mold opening force and an open portion allowing said mold to be inserted into/taken out from said holding portion in a direction of the shorter side of said mold;

a mold moving device that moves said mold to insert/take out said mold into/from said holding portion through the open portion in said frame; and

a mold opening/closing device that opens/closes the mold located outside the frame,
wherein said frame is constructed by laminating a plurality of sheet-like frame materials in the longitudinal direction of the frame.

10. (Currently Amended) A mold clamping apparatus according to claim 9, wherein

~~the~~ a strength of the surface of said frame material is higher than ~~the~~ a strength of ~~a~~ the central portion in ~~the~~ a longitudinal direction of the frame material.

11. (Original) A mold clamping apparatus according to claim 9, wherein a stress concentration portion of said frame material is chamfered.
12. (Currently Amended) A mold clamping apparatus according to claim 11, wherein said frame material has a decarburized layer on ~~the~~ a surface thereof, and the decarburized layer is removed from a portion of said frame material subjected to ~~the~~ chamfering processing.
13. (Original) A mold clamping apparatus according to claim 11, wherein residual compression stress is generated in a tensile stress concentration portion of the frame material.
14. (Original) A mold clamping apparatus according to claim 9, wherein each of the plural laminated frame materials has a different strength.
15. (Original) A mold clamping apparatus according to claim 9, wherein each of the plural laminated frame materials has a different strength and a different thickness.
16. (Original) A mold clamping apparatus according to claim 9, wherein said frame is constructed by laminating thick frame materials each having a low strength and thin frame materials each having a high strength in combination.

17. (Original) A mold clamping apparatus according to claim 9, wherein
said frame is constructed by combining frame materials having a single holding portion
and open portion with frame materials having plural holding portions and open portions.
18. (Currently Amended) A mold clamping apparatus according to claim 9, wherein
said frame is constructed by arranging the frame materials corresponding to ~~the~~ a shape of
a mold to be held.
19. (Currently Amended) A mold clamping apparatus according to claim 9, wherein
said frame is constructed by laminating the frame materials each having a different
thickness depending on ~~the~~ a shape of a mold to be held.
20. (Currently Amended) A mold clamping apparatus according to claim 9, wherein
said mold has a predetermined functional device necessary for molding ~~provided~~
~~protrudedly on that protrudes from the mold, to be held~~ and said ~~frame has~~ predetermined
functional device is disposed over a space of said frame formed between laminated portions of
said frame ~~capable of accommodating the functional device by laminating frame materials~~
~~adjacent each other at a predetermined position such that they are apart from each other.~~
21. (Currently Amended) A mold clamping apparatus according to claim 9, wherein
said mold has a predetermined functional device which is necessary for molding ~~provided~~
~~protrudedly on that protrudes from the mold, to be held~~ and is detachably connected to the mold,
and
~~said frame contains a space by laminating frame materials adjacent each other at a~~
~~predetermined position such that they are apart from each other, and~~

said functional device is disposed ~~in said~~ over a space of said frame formed between laminated portions of said frame.

22. (Currently Amended) A mold clamping apparatus according to claim 9, wherein ~~said frame contains a space by laminating frame materials adjacent each other at a predetermined position such that they are apart from each other, and~~

said mold moving device is disposed within ~~said~~ a space of said frame formed between laminated portions of said frame.

23. (Currently Amended) A mold clamping apparatus further comprising:

a mold in which a mold opening force is generated by applying a pressure for opening the mold;

a frame having a holding portion for holding the mold resisting ~~the~~ a generated mold opening force; and

a mold closing force application device, provided in the holding portion of the frame, that applies a force higher than the mold opening force in a direction of closing the mold using a pressure applied to ~~the~~ an inside of the mold,

wherein said frame includes a plurality of laminated, sheet-like frame materials in a longitudinal direction of the frame.

24. (Canceled)

25. (Currently Amended) A mold clamping apparatus according to claim 23, wherein said frame is constructed by combining frame materials having a single holding portion and an open portion with frame materials having plural holding portions and open portions.

26. (Currently Amended) A mold clamping apparatus according to claim 23, wherein said frame is constructed by arranging the frame materials corresponding to ~~the~~ a shape of a mold to be held.

27. (Currently Amended) A mold clamping apparatus according to claim 23, wherein said frame ~~is constructed by laminating the~~ includes frame materials each having a different thickness depending on ~~the~~ a shape of a mold to be held.

28. (Currently Amended) A mold clamping apparatus according to claim 23, wherein said mold has a predetermined functional device necessary for molding ~~provided protrudedly on that protrudes from the mold, to be held and said frame has predetermined functional device is disposed over a space of said frame between laminated portions of said frame capable of accommodating the functional device by laminating frame materials adjacent each other at a predetermined position such that they are apart from each other.~~

29. (Currently Amended) A mold clamping apparatus according to claim 23, wherein said mold has a predetermined functional device which is necessary for molding ~~provided protrudedly on that protrudes from the mold, to be held and is detachably connected to the mold,~~ and

~~said frame contains a space by laminating frame materials adjacent each other at a predetermined position such that they are apart from each other, and~~

said functional device is disposed ~~in said~~ over a space of said frame formed between laminated portions of said frame.

30. (Currently Amended) A mold clamping apparatus according to claim 23, wherein

~~said frame contains a space by laminating frame materials adjacent each other at a predetermined position such that they are apart from each other, and~~

said mold moving device is disposed within ~~said~~ a space of said frame formed between laminated portions of said frame.

31. (Currently Amended) A mold clamping method for clamping a mold having a longer side and a shorter side and in which a mold opening force is generated by applying a pressure for opening the mold to ~~the~~ an inside of the mold, comprising the steps of:

preparing a frame containing a holding portion for holding the mold ~~resisting the generated mold opening force~~ and an open portion which allows the mold to be inserted into/taken out from the holding portion, wherein said frame is constructed by laminating a plurality of sheet-like frame materials in a longitudinal direction of the frame; and

inserting the mold into the holding portion through the open portion in the frame by moving the mold in a direction of ~~the~~ a longer side of said mold and closing and holding the mold, and after molding, taking out the mold from the holding portion through the open portion and opening the mold outside the frame.